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|--------------------|-------------|----------------------|---------------------|------------------|
| APPLICATION NO.    | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
| 10/591,197         | 05/16/2007  | Kim Rishoj Pedersen  | GRP-0173            | 6052             |
| 23413              | 7590        | 09/22/2010           |                     |                  |
| CANTOR COLBURN LLP |             |                      | EXAMINER            |                  |
| 20 Church Street   |             |                      | NGO, CHUONG D       |                  |
| 22nd Floor         |             |                      | ART UNIT            | PAPER NUMBER     |
| Hartford, CT 06103 |             |                      | 2193                |                  |
|                    |             | NOTIFICATION DATE    | DELIVERY MODE       |                  |
|                    |             | 09/22/2010           | ELECTRONIC          |                  |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

[usptopatentmail@cantorcolburn.com](mailto:usptopatentmail@cantorcolburn.com)

|                              |                                      |  |
|------------------------------|--------------------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/591,197 | <b>Applicant(s)</b><br>PEDERSEN ET AL. |
|                              | <b>Examiner</b><br>Chuong D. Ngo     | <b>Art Unit</b><br>2193                |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If no period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(o).

#### Status

- 1) Responsive to communication(s) filed on 16 May 2007.  
 2a) This action is FINAL.      2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-37 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1,2 and 4-36 is/are rejected.  
 7) Claim(s) 3 and 37 is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 30 August 2006 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)  
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) Information Disclosure Statement(s) (PTO/SB/06)  
 Paper No(s)/Mail Date 9/22/06
- 4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date: \_\_\_\_\_  
 5) Notice of Informal Patent Application  
 6) Other: \_\_\_\_\_

**DETAILED ACTION**

1. Claims 3 and 37 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim should refer to other claims in the alternative only. See MPEP § 608.01(n). Accordingly, the claims 3 and 37 not been further treated on the merits.
2. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claims 1,2 and 4-36 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

The test to determine whether a claimed process recites patentable subject matter under § 101 is whether: (1) it is tied to a particular machine or apparatus that imposes meaningful limits on the claim's scope to impart patent-eligibility , or (2) it transforms a particular article into a different state or thing. *In re Bilski*, 545 F.3d 943, 961-62 (Fed. Cir. 2008) (en banc), *cert. granted*, 129 S. Ct. 2735 (Jun. 1, 2009) (No. 08-964).

Nominal recitations of structure in an otherwise ineligible method fail to make the method a statutory process. *Ex parte Langmyr*, 89 USPQ2d 1988, 1996 (BPAI 2008) (informative) (*citing Gottschalk v. Benson*, 409 U.S. 63, 71-72 (1972)).

As per claims 1,2 and 4-35, it is clear from the claims that the claimed method is neither tied to a particular machine or apparatus that impose meaningful limits on the claim's scope to impart patent-eligibility nor transforms a particular article into a different state or thing. The

recitation “a hardware implemented filtering method” in the preamble is merely a Nominal recitation of structure, and thus fails to tie the method to a particular machine that imposes meaningful limits on the claim's scope to impart patent-eligibility. Therefore, the claimed process fails to meet the machine-or-transform test, and thus is a nonstatutory process.

As per claim 36, the claimed Fast filtering means with the recited means when read in light of the specification clearly cover a software for implementing the filter. Therefore, claim 36 is also directed to non-statutory as being directed to a software per se.

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1,2,4,7-19,22-26,28,29,31,32,35 and 36 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by McNeely et al. (5,838,600).

As per claims 1,2,4,22,28,31 and 36, McNeely et al. discloses in figure 2 a hardware implemented filtering method comprising; establishing a representation (output of 202) of a

derivative of at least a part of a time-quantized input signal (IN), and establishing at least one sample of a time-and amplitude-quantized output signal (OUT) at least partly by a convolution in the time domain of a difference signal representation (output of 202) of said input signal (IN) and a sum representation of the filter finite impulse response (see col. 5, lines 12-65).

As per claim 7, McNeely et al. discloses in figure 2 said establishing a representation of the derivative of at least a part of said time-quantized input signal (IS) comprising establishing a sequence of differences (output from 202) between successive samples of said at least a part of said input signal.

As per claim 8, McNeely et al disclose, based on in figure 1 and col. 5, lines 12-65, said at least a part of said time-quantized input signal in respect of its length clearly corresponding to the length of said at least a part of an impulse response.

As per claim 9, McNeely et al disclose said representation of the derivative of at least a part of said time-quantized input signal is stored in a differentiated input signal representing array (the delay line of the filter, see figure 1, elements 101-106).

As per claims 10 and 13-15, the providing of the difference signals from the delay line which can be seen as a snapshot register to the multipliers in the filter (see figure 1) can be seen as indexing and querying corresponding times relative to each other and directions of amplitude changes of said at least a part of said input signal.

As per claim 11, McNeely et al discloses, based on figure 1, the length of said at least a part of said filter representation being an integer multiple of the length of a symbol of said at least a part of said time-quantized input signal.

As claim 12, as the symbol only changes once from one to the other symbol, a number of

changes within a symbol of said at least a part of said time-quantized input signal is constant.

As per claims 16 and 17, McNeely et al. discloses in col. 5, lines 50-55, said at least a part of said filter representation being predetermined and a sum representation of at least a part of an impulse response.

As per claim 18, said at least a part of said filter representation is clearly implemented by means of at least one filter coefficient.

As per claim 19, said at least a part of said filter representation is implemented by means of at least one model, preferably represented by at least one polynomial (see col. 5, line 25).

As per claims 23 and 24, McNeely discloses in figure 2 said performing filtering further comprises for each of said at least one sample of a time- and amplitude-quantized output signal adding (207) the result of multiplying an initial value of said at least a part of said time-quantized input signal with a value of said at least a part of said filter representation.

As per claims 25,26,29,32 and 35 the claimed limitations are disclosed by figure 2 and in col. 5, lines 26-65.

7. Claims 5,6,20,21,27 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over McNeely et al. (5,838,600).

As per claims 4 and 5, it is noted that McNeely et al does not teach that the time-quantized input signal comprises in average at least 10 samples for each input signal value change, and/or is a pulse width modulated signal. However, since the filter of McNeely is not restricted to any particular type of signal. It would have been obvious applications to a person of ordinary skill in the art to apply the filtering method of McNeely et al to filter those input signal

as claimed.

As per claims 20 and 21, As per claims 4 and 5, it is noted that McNeely et al does not teach that the implementation of said at least a part of said filter representation is adapted to utilize any symmetry of said filter representation and/or said at least a part of said filter representation is user-adjustable. However, the features of utilizing any symmetry of the filter representation to reduce calculation and/or user-adjustable filter characteristic as claimed are well-known and thus would have been obvious to a person of ordinary skill in the art for further improving the filter.

As per claims 27 and 30, it is noted that McNeely et al does not teach that a sample rate of said time- and amplitude-quantized output signal is different from a sample rate of said time-quantized input signal (IS) and/or the filter representation comprises a sum representation of a low-pass filter. However, it is well-known to perform an interpolation/decimation, which produces and output having different sample rate from the input, and a low-filter by an FIR filter. Since McNeely et al. teaches an FIR filter, it would have been obvious applications to a person of ordinary skill in the art to apply the filter as taught by McNeely to perform an interpolation/decimation and a low-pass filtering function as claimed.

8. Claims 33 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over McNeely et al. (5,838,600) in view of Flockencier (5,511,015).

It is noted that McNeely et al does not teach the at least a part of a filter representation representing the derivative of at least a part of an impulse response and the step of integrating at least once said time- and amplitude-quantized output signal. However, the claimed feature have

disclosed by Flockencier in figures 1,2 and 4. Thus, it would have been obvious to a person of ordinary skill in the art to implementing the filter of McNeely et al by using the derivative of at least a part of the filter impulse response, and integrating the output at least once as taught by Flockencier in order to reduce circuitry and processing time.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chuong D. Ngo whose telephone number is (571) 272-3731. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lewis, Jr. A. Bullock can be reached on (571) 272-3759. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Chuong D Ngo/  
Primary Examiner, Art Unit 2193